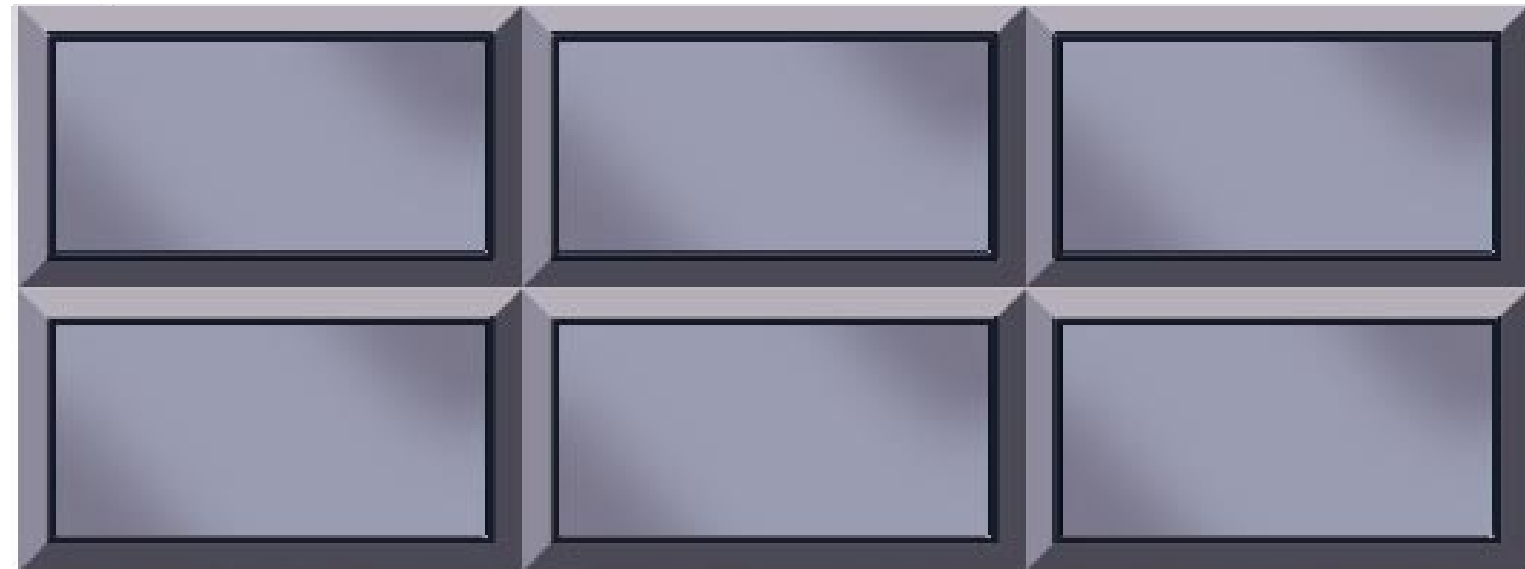




A GLASS MENAGERIE

Six new plasma display panels sparkle and shine.

By Peter H. Putman, CTS

videosystems.com

As I sit and write this review, I can't help but feel that I'm in some kind of Orwellian nightmare — surrounded by large, flat-panel displays showing larger-than-life talking heads. Of course, the nightmare is quickly dispelled when I turn up the volume on my surround-sound system to hear one of these heads discussing the Mobile Azalea Festival. (It was the only PBS HDTV programming loop!)

The reason for this Big Brother-

Fujitsu dropped off its new **PDS-4229** "econo" plasma, a 42in., 16:9 panel with competitive pricing plus a host of features. From **Sampo**, I received the **PME-42V3**, a 42in., 16:9 multimedia panel for the home theater and consumer market, but also at home in a professional A/V setting. **Sony** was represented by its **PFM-42B1** panel, a 42in., 16:9 design that sparked the plasma price wars. This model is in high demand for professional and high-end consumer use.

ers to handle the 14 different five-wire and three-wire video/computer feeds. This switcher works well, and handled the rat's nest of wires with no sweat.

Tom Nelson of NEC Technologies drove about 150 miles to my studio to help unpack and set up the 61MP1 plasma panel (it's really big!), while Cliff Plavin of Progressive Labs spent a few hours determining precise color coordinates for the different panels, allowing me to get accurate color tem-



From left: Sampo PME-42V3, Sony PFM-42B1, and Fujitsu PDS-4229.

like experiment is *Video Systems'* fourth annual plasma panel roundup. The location was (once again) the somewhat cramped confines of my studio, which proved big enough to handle six plasma display panels in sizes ranging from 42 inches to a mammoth 61 inches.

The panels tested this year represent models introduced in the past six months. A few of them had their official coming-out parties at NAB 2001 and Infocomm 2001. There was no particular system involved in selecting the panels. I basically asked for a particular panel; if it was available, I got it; if not, the manufacturer sent something else along. As a result, I wound up with a mixed bag of entrants.

There were some big boys playing in this tournament, too. **Panasonic** finally produced its long-awaited **TH-50PHD3U**, a 50in., 16:9 plasma panel holding the promise of the same high performance as the 42in. design. **Pioneer** arranged to have one of its first 50in., 16:9 **PDP-503CMX** panels dropped at my doorstep, while **NEC Technologies** figured out a way to pack and ship one of its super-sized **PlasmaSync 61MP1** 61in., 16:9 panels for the festivities.

Several manufacturers and individuals provided additional support for this review, and some thanks are in order. Clint Hoffman and Dave Bright of Kramer Electronics graciously sent over one of Kramer's new 16x16 RGBHV audio matrix switch-

perature measurements. Finally, Josh Kairoff of Pioneer came in for a day to explore and explain the features of the PDP-503. Thanks, guys!

The line-up

Again, here are the contenders: **Fujitsu's PDS-4229 (\$6,999)** plasma panel appears to be in the same category as the Sampo design, although it may have more of a consumer focus. The connector complement is not as large on this 852x480

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(Wide VGA) panel, but look at the price — something had to give. Even so, you can connect a multitude of sources through the rear-panel VGA and BNC jacks and access them quickly with the supplied remote control. But you'll need a separate audio playback system, as there's no onboard amplification.

Sampo's PME-42V3 (\$7,995) appears to be a no-frills, bare-bones panel at first glance. But it's got a few things under the hood, including a full

professional/home theater 50in. design, with BNC and 15-pin jacks for every possible component video and RGB signal (but no DVI). Want onboard audio? You can have two channels of it at 8W per channel, or loop your audio sources and control them with the supplied remote.

Pioneer's PDP-503CMX (\$17,999) appears to be identical to its predecessor, the PDP-502MX. But there are a lot of changes in this 1280x768 (Wide XGA) 50in. panel, and the most im-

workings vary considerably. For example, some manufacturers provide sequential input selection, a feature I have never understood and quite frankly detest. Why make the end-user sequence through a series of inputs over and over to change from a DVD source to a computer signal? Fortunately, only two panels in this review (Sampo and Panasonic) use sequential input selection. Everyone else provides direct access to any input at any time.

While the Panasonic sequence only

Model specifications

Model	Dimensions	Weight	Panel size	Aspect ratio	Resolution	Input signals	Internal audio	MSRP
Fujitsu PDS-4229	40.7" x 25.2" x 3.3"	62.8 lbs.	42"	16:9	852x480 PDP	NTSC/PAL, VGA, SVGA, XGA, DTV/HDTV	none	\$6,999
Sampo PME-42V3	41.3" x 26" x 5"	79.4 lbs.	42"	16:9	852x480 PDP	NTSC/PAL, VGA, SVGA, XGA, SXGA, DTV/HDTV	none	\$7,995
Sony PFM-42B1	40.7" x 25" x 3.3"	65.5 lbs.	42"	16:9	1024x1024 PDP	NTSC/PAL, VGA, SVGA, XGA, SXGA, DTV/HDTV	external	\$7,999
Panasonic TH-50PHD3U	47.6" x 28.5" x 3.9"	99.2 lbs.	50"	16:9	1366x768 PDP	NTSC/PAL, VGA, SVGA, XGA, SXGA, UXGA, DTV/HDTV	8W stereo	\$14,995
Pioneer PDP-503CMX	48" x 28" x 4"	88 lbs.	50"	16:9	1280X768 PDP	NTSC/PAL, VGA, SVGA, XGA, SXGA, UXGA, DTV/HDTV	2W stereo	\$17,999
NEC PS-61MP1	58.3" x 35" x 4.7"	134.5 lbs.	61"	16:9	1365x768 PDP	NTSC/PAL, VGA, SVGA, XGA, SXGA, UXGA, DTV/HDTV	7W stereo	\$27,995

rack of input connections. In addition to professional-type BNC jacks for component video and RGB signals, you also get a DVI connector. Although there is no onboard audio reinforcement, you can use the panel as an audio-follow switcher and control volume through the supplied remote. The panel's native resolution is 852x480 pixels, or Wide VGA.

Sony's PFM-42B1 (\$7,999) is the plasma that stirred up the market last fall. Introduced as a low-cost 42in. design with 1024x1024 pixel resolution, this panel has turned market pricing on its ear (see the Fujitsu above). It's another bare-bones design, with a pair of 15-pin VGA jacks and composite/S-Video inputs, but no onboard audio. However, like the PME-42V3, you can loop audio feeds in and out for volume control from the supplied baton remote.

Panasonic's TH-50PHD3U (\$14,995) is the big brother of last year's best-in-review TH-42PWD3 panel, and boasts 1365x768 (Wide XGA) pixel resolution. It's a full-bore

portant is a slot for aftermarket video/RGB/digital interfacing. Slide in the Pioneer accessory videocard, and you've got compatibility with all kinds of RGB and video signals — even DVI. There's a stereo (2W per channel) onboard audio amplifier, and full video/audio follow switching is available from the supplied remote.

NEC's PS-61MP1 (\$27,995) is the first of the really big plasma panels to hit the market (look for Samsung and LG/Zenith to follow suit shortly), but it's manufactured on the same fabrication line used for NEC's 50in. panels. This 61in. panel also has the same resolution as its 50in. brother, 1365x768 (Wide XGA), and you get a full complement of RCA, DIN, BNC, VGA, and DVI jacks for hookup. Audio feeds can be run through the panel's 7W stereo amplifier, or looped through to an external system. All functions are accessible from the supplied baton remote.

Menus and remotes

Although many plasma panels appear the same outwardly, their inner

involves three possible inputs (component, RGB, and composite), the Sampo sequence is particularly vexing. You must step through BNC RGB, RGB (15-pin input), DVI, AV (composite video), S-Video, and then YPbPr for DTV (or YCbCr for interlaced component sources). What's worse, it takes about two seconds for the panel to select the next input and check to see if a signal is really there.

Menus also vary widely among panels. The best menus that provided a combination of fast navigation, menu placement, and readability were found on the NEC, Panasonic, and Sony panels. NEC's menu appears as a small box in the upper left corner, while the Panasonic menu pops up as a small box in the upper right of the screen.

Sony's menu is simple, keyed white text and covers a good portion of the screen, but doesn't obscure as much of the image as the Fujitsu pulldown menu, which is a large, tiled affair with crude-looking text. While Sony's menu is fast, it has too many hidden submenus. This is also a problem with the Panasonic at times.

You also must remember to push

the enter key each time you make an adjustment. Otherwise, the adjustment is lost when you exit the menu.

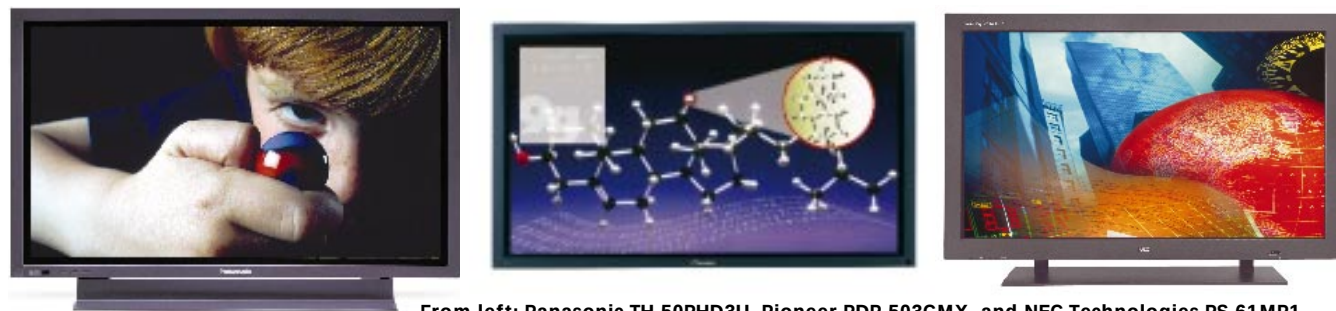
Sampo's menu also uses the text overlay method. You depress the menu selection key, scroll to the desired item, and then use the adjust key as needed. However, there aren't enough items to adjust to suit my taste (such as RGB drive and bias). The menu will disappear from the screen if you do nothing for a short period of time, but you can't remove it immediately unless you hit another button on the

under tungsten lighting on video sets. Fujitsu also offers three color temp settings, plus a user mode. This is one more mode than Sampo provides, as all of its three CT choices are factory-defined.

Some of the functions you'll use most often are directly accessible from the remote control keypad. NEC's baton remote lets you select widescreen modes, zoom in on the image, adjust volume, and activate NEC's AccuBlend scaling/scan conversion circuitry. NEC also has a clever "Multi"

duction choices. There's also an economy fan mode, and the panel has been certified for Energy Star operation. This is no small accomplishment when you consider how much power plasma panels consume.

NEC's panel also has a digital noise reduction circuit, plus a cinema on/off mode (presumably 3:2 correction again), 15 levels of gray pillar adjustment for letterboxed material, and four gamma modes (one is user-definable). Panasonic also provides three preset gamma settings, which is



From left: Panasonic TH-50PHD3U, Pioneer PDP-503CMX, and NEC Technologies PS-61MP1.

keypad, such as "Mute."

Pioneer's menu is a radical departure from its "in your face" design in the past, which used large, coarse text. The new menu is a tiled, attractive pulldown one with an almost full range of user adjustments. To get into such things as drive and other esoteric settings, you have to access the systems integrator menu. Now Pioneer just needs to reduce the size of the menu. It covers as much of the screen as its predecessor, although it does minimize during specific adjustments.

Calibration of plasma panels typically involves access to RGB drive controls, and preferably also RGB bias. NEC and Panasonic provide both directly from the menu, with only NEC providing user access to drive and bias for all three color channels. Panasonic only allows setting of the red and blue high/low points. Both panels have at least three color temperature modes, one of which can be user-defined.

Sony's menu lets you select one of six color temperature settings — two are preset and six are user-defined (plus you can name them). This is also true of the Pioneer menu, which provides five color temperature settings, as well as a "Warm" mode for use

mode, in which you can combine an RGB source with a video source as picture-in-picture, or side-by-side at different sizes.

Sony listened to the request of systems integrators and included many functions on its remote, including direct access to aspect ratios, contrast, brightness, and horizontal/vertical position and size. Bravo, Sony! All of the other remotes provide little more than volume and aspect ratio buttons, so you'll have to dig into menus more often with the Fujitsu, Pioneer, Panasonic, and Sampo remotes.

Speaking of aspect ratios and screen formats, there is a bewildering number of choices among these panels — and they are not all labeled in the same way. NEC provides four different aspect ratio settings, along with a setting for RCA's DTC-100 DTV set-top box (there was a signal timing issue involved). Sony, Sampo, and Panasonic also give you four (depending on input), while Fujitsu provides five settings. Pioneer is content to allow three choices for aspect ratios.

You'll also find varying enhancements among the panels. The Pioneer has a new PureCinema mode with three steps for correcting 3:2 pulldown artifacts, plus three digital noise re-

matched by Fujitsu. However, that's three more gamma adjustments than you'll find on either the Sony or Sampo panel.

Sony's is the only panel that provides a YUV/RGB toggle switch on its remote, which is extremely useful if you have input the wrong signal source and want to correct the sync format on the fly. On all other panels, you'll need to go into the menu and tell the panel what kind of sync it's receiving. Fortunately, most of the panels are smart enough to recognize the sync/signal combination and lock it up, with the exception of the Sampo.

On the test bench

While the average viewer might conclude that all plasma panels look the same, I can assure you there are significant differences in performance from model to model, and from manufacturer to manufacturer. Plasma panels carry some heavy baggage of their own when it comes to displaying computer and video images. They are essentially nonlinear devices laboring to produce linear grayscales, good contrast, deep blacks, and saturated colors.

For my performance tests, I calibrated each panel to a 256-level

grayscale and PLUGE patterns from *DisplayMate* and the *Video Essentials* DVD. DVD images were connected as YCbCr component from my Sony DVP-S7000 (old, but still a beauty), while HDTV test clips originated on D-VHS from a Panasonic PV-HD1000. I also took several live feeds over the air from Samsung's new SIR-T150 ATSC set-top DTV tuner.

RGB signals were connected at VGA, SVGA, XGA, and SXGA resolution from a Pentium III 800MHz PC with a Diamond Stealth 550 card.

of 67.1 nits, but its AGC circuit quickly kicked in and dropped the reading to 40.5 nits after a few minutes. Fujitsu's PDS-4229 was a close runner-up with 64.8 nits, followed by the Sony PFM-42B1 at 63.3 nits. The interesting thing about all of these panels is that they use Fujitsu-manufactured plasma glass arrays and apparently some of the same AGC circuitry.

In the 50in. category, the Panasonic TH-50PHD3U and Pioneer PDP-503 panels began a neck-and-neck competition that ran through every perfor-

ings. The reason? Panasonic's industry-low black levels, which averaged .23 nits (.07 ft.-L).

That's the kind of contrast performance you see in a reference-grade CRT monitor, and the TH-50PHD3U beat the second-place PDS-4229 (240:1ANSI, 253:1 peak) by a substantial margin. The Fujitsu and Sampo panels tied for third in black level performance, while the Pioneer and NEC panels were surprisingly high at .71 and .81 average, respectively.

What about color temperature?

came down to a nip-and-tuck battle between the Pioneer and Panasonic panels, with the PDP-503 exhibiting a slight band/contour at .8 nits, and the TH-50PHD3U revealing seven such artifacts that were barely noticeable. It's important to note that both panels — and the PDS-4229 — maintained even grayscales with no color shifts, even when false contours were seen.

Not so with the rest of the field. Sony's PFM-42B1 had a noticeable red band on its 256-level grayscale at 2.8 nits, and a yellow-to-white shift at 60 nits. The Sampo panel had numerous magenta-tinted false contours at the low end of the grayscale, while the NEC panel had faint but noticeable red, green, and blue color bands at regular intervals starting at .5 nits. I've also seen these color bands on the NEC PlasmaSync 42MP1 and 50MP1 panels, so it must be a signal-processing artifact.

The final hurdle was my famous autosync crunch test, wherein I rapidly sequence through 25 different RGB signal and sync formats to see how fast and accurately each panel recognizes, sizes, and centers the in-

Brightness & contrast performance

Model	Center brightness, cd/m²	Center brightness, ft/L	ANSI contrast	Peak contrast	Center white screen color temperature	Artifacts and false contour results
Fujitsu PDS-4229	64.8	18.9	240:1	253:1	6510	Very Good
Sampo PME-42V3	67.1	19.6	233.8	325:1	7290	Poor
Sony PFM-42B1	63.3	18.5	224:1	239:1	6490	Good
Panasonic TH-50PHD3U	67.2	19.6	523:1	627:1	6490	Excellent
Pioneer PDP-503CMX	79.9	23.3	168:1	176:1	6490	Excellent
NEC PS-61MP1	58.7	17.2	140:1	174:1	6490	Good

coming signal. Pioneer's PDP-503 took top honors here, correctly sizing and centering 17 formats with no further assistance. Six additional formats required some menu tweaking on my part, for a total of 23 good signals.

Sony's PFM-42B1 — although it also produced 23 total good signals — was only able to set up 11 on its own, requiring my intervention to clean up 12 more. NEC's 61MP1 came in next with 22 usable signals, getting 13 of them right on its own and nine more with my help. Both the PDS-4229 and TH-50PHD3U performed well with 21 usable signals, although the Pana-

sonic panel correctly figured out 18 on its own, as opposed to the Fujitsu score of 13. The PME-42V3 finished last with 13 total good signals.

Video quality tests

This final part of the review is when I get to put away all the test instruments and just sit back and watch TV. Well, not really “sit back” — I have to run back and forth from panel to panel to make subjective evaluations, which is a pain in the neck when I've loaded up an interesting program. For example, I played the entire *Lawrence of Arabia* DVD three times during this

RGB sync tests

OK means signal needed no further adj. ADJ means signal usable after adj. NO means signal unusable after adj.

Scan	Fujitsu PDS-4229	Sampo PME-42V3	Sony PFM-42B1	Panasonic TH-50PHD3U	Pioneer PDP-503CMX	NEC PS-61MP1
VGA-1 31.5KHz / 70Hz	OK	NO	ADJ	OK	OK	OK
VGA-2 31.5KHz / 70Hz	OK	OK	OK	OK	OK	OK
VGA-3 31.5KHz / 60Hz	ADJ	OK	OK	OK	OK	OK
VESA1/SVGA 35.2KHz / 56Hz	OK	OK	OK	OK	OK	OK
VESA-2/VGA 37.9KHz / 72Hz	OK	OK	OK	OK	OK	OK
VESA-3/XGA 48.4KHz / 60Hz	OK	OK	OK	OK	OK	ADJ
VESA-4/XGA 56.4KHz / 70Hz	OK	ADJ	OK	OK	ADJ	ADJ
VESA-5/SVGA 37.9KHz / 60Hz	OK	OK	ADJ	OK	OK	OK
VESA-6/SVGA 48.1KHz / 72Hz	OK	OK	OK	OK	OK	OK
XGA-5 57KHz / 70Hz	OK	ADJ	ADJ	OK	ADJ	ADJ
XGA-6 61.1KHz / 76Hz	OK	NO	ADJ	OK	ADJ	ADJ
Macintosh 13" VGA 35KHz / 67Hz	OK	NO	ADJ	OK	OK	OK
Macintosh 16" SVGA 49.7KHz	ADJ	NO	ADJ	OK	OK	OK
Macintosh 19" XGA 60.2KHz / 75Hz	OK	ADJ	ADJ	OK	ADJ	NO
Macintosh 21" SXGA 68.7KHz / 75Hz	OK	ADJ	OK	OK	OK	OK
Super Mac XGA 48KHz / 60Hz	ADJ	ADJ	OK	ADJ	ADJ	NO - WS
Radius XGA 48KHz / 60Hz	ADJ	ADJ	OK	ADJ	ADJ	NO - WS
SGI SXGA 63.9KHz / 60Hz	ADJ	NO	OK	OK	OK	ADJ
SGI Indigo XGA 48KHz / 60Hz	NO (GRN)	NO	ADJ	NO (GRN)	NO (GRN)	ADJ
IBM RS SXGA 63.4KHz / 68Hz	ADJ	NO	ADJ	NO (GRN)	NO (GRN)	ADJ
Sun 1152 x 900 61.8KHz / 66Hz	NO	NO	ADJ	OK	OK	OK
Sun 1152 x 900 71.7KHz / 76Hz	ADJ	NO	ADJ	OK	OK	OK
Sun 1280 x 1024 81.0KHz / 76Hz	NO	NO	NO	ADJ	OK	OK
Sun 1600 x 1280 89.3KHz / 67Hz	NO	NO	NO	NO	OK	ADJ
IBM RS 1360 x 1024 70.8KHz / 67Hz	ADJ	NO	ADJ	NO	OK	ADJ
SCORES (Fine text pattern used to spot clock and sync phasing errors.)	13 OKs, 8 ADJs, 4 NOs 21 usable	7 OKs, 6 ADJs, 12 NOs 13 usable	11 OKs, 12 ADJs, 2 NOs 23 usable	18 OKs, 3 ADJs, 4 NOs 21 usable	17 OKs, 6 ADJs, 2 NOs 23 usable	13 OKs, 9 ADJs, 3 NOs 22 usable

Additional test signals originated from an Extron VTG200 test pattern generator. Late in the review, I procured a Communications Specialties Deuce Pro video scaler to drive the panels at 852x480, 1280x768, and 1365x768 pixel resolution.

All of the panels were measured for brightness with fullscreen (16:9) and normal (4:3) white fields. Some of the panel manufacturers provide a panel AGC circuit to throttle back the drive on bright signals and guard against pixel burn-in, while others just let 'em rip.

Sampo's PME-42V3 was the brightest panel in 16:9 mode, with a reading

mance category. On the Pioneer, brightness was clocked at 79.9 nits, edging out the Panasonic's 67.2 nits. (Selecting “Dynamic” mode on the Panasonic boosted that number to 70 nits.) Meanwhile, NEC's 61MP1 was clocked at 58.7 nits.

I should mention that every one of these panels can produce a lot more light output. However, grayscale accuracy will suffer as a result.

Of course, brightness isn't everything. I measured contrast in both 16:9 and 4:3 modes for each panel, and the overall winner was the TH-50PHD3U with an amazing 523:1 ANSI average and 627:1 peak read-

Only the PME-42V3 did not provide access to RGB drive, leaving me with three factory color temperature presets to deal with. (None was truly satisfactory.) Using the FSR Color Analyzer and Cliff Plavin's calibrations, I was able to tune each of the other five panels to an almost-perfect D6500 white reference. Kudos to NEC and Pioneer (installers' menu only) for providing access to both RGB drive and bias controls — you can only tune the drive and bias for the red and blue channels on the Panasonic panel.

The next step was to test each panel for grayscale modulation and false contouring. Here, the competition

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review, but I still haven't watched it from start to finish.

Let's begin with the 42in. panels. The best-looking video in this category came from a panel I hadn't expected — Fujitsu's PDS-4229. Even though it has only 852x480 pixel resolution, it was more than up to the challenge of playing back 480i and DTV sources — even 720p and 1080i, which require quite a bit of downconversion.

Once I found the right combination of gamma and contrast/brightness settings, I was very happy with the re-

All three of the large panels did a very good job with all video sources. I calibrated them to within a cat's whisker of D6500, and the resulting DVD and HDTV playback looked as clean as my reference Princeton AF3.0HD 32in. HDTV monitor. It was difficult to pick a clear winner here. NEC's video images tend to overwhelm the senses. But the 61MP1 was hampered by a somewhat high average black level of .71 nits, which was evident when viewing DVDs like *Men in Black*.

The black levels on the TH-

its average black levels were half that of the Pioneer.

CSI's Deuce Pro scaler supports three of the plasma resolutions encountered in this review: 852x480 Wide VGA, 1280x768 Wide XGA, and 1365x768 Wide XGA. In all cases, the Deuce Pro (fed with component YCbCr 480i from DVDs) made an improvement — often subtle (with the Pioneer and Panasonic panels) and more often substantial (with the Sampo panel). It cleaned up a lot of the motion artifacts and presented an overall crisper pic-

Overall scores

Model	Brightness	Contrast	Grayscale	RGB scaling	Video quality	Artifacts	White balance	Connectivity	Operation	TOTAL
Fujitsu PDS-4229	7	8	9	8	9	7	10	8	8	74
Sampo PME-42V3	8	8	5	4	6	3	5	8	5	52
Sony PFM-42B1	7	8	7	6	7	6	10	10	8	69
Panasonic TH-50PHD3U	8	10	9	9	10	9	10	10	9	84
Pioneer PDP-503CMX	9	7	10	9	10	10	10	10	8	83
NEC PS-61MP1	7	6	7	8	8	6	10	10	9	71

sult, with one minor gripe: Fujitsu needs to fiddle a bit more with gamma setting for movies and give the contrast an additional boost.

Sony's PFM-42B1 was also a good performer, but not quite as crisp as the PDS-4229. Oddly enough, I observed this last year on two other Sony panels. A model with Wide VGA resolution appeared sharper than another model with the same 1024x1024 pixel matrix as the PFM-42B1. It may have something to do with the Alternate Lighting of Surfaces interlaced pixel scanning used on the PFM-42B1, which produces a small flicker.

The Sampo PME-42V3 performed fairly well for using older glass, but was hampered by the lack of access to color temperature settings and a great deal of false contouring in low gray areas. Since this is Sampo's first entry into the U.S. plasma market, I'll cut it some slack by adding that this panel did have good black level and contrast performance.

While testing the big boys, I ran into an interesting problem. It was difficult to stand far enough from some of the panels to avoid noticing their pixel structures. This was especially true with the 61MP1, which is optimally viewed from 8ft. to 19ft., depending on whether the source is HDTV or 480i DVD.

50PHD3U are so deep that I wonder why Panasonic even bothered to put a "Black Boost" control in the menu — it isn't needed. However, the Pioneer seemed to produce video images with more punch than the Panasonic, particularly under normal room lighting. Turning off the lights immediately shifted the advantage to the Panasonic panel. It had a subtle rendering of grayscales that was diminished by switching to "Dynamic" mode.

So if you want good video, you'll get it on any of the three big screens. The NEC panel needs to be placed at the proper viewing distance, particularly with motion 480i and HDTV programs. It does produce some motion artifacts that were not as evident on the Panasonic or Pioneer.

If you are choosing between the latter two, use the Panasonic if you have controlled ambient lighting. Got to leave some lights up? Go with the Pioneer. Neither panel had significant motion artifacts on either DVD or HDTV source material, and they produce beautiful saturated colors. When it came to color fidelity and color shading, it was a toss-up between the Panasonic's rich blacks and the new deep-pixel phosphors on the Pioneer.

If anything, the expanded grayscale of the TH-50PHD3U gave it the edge;

ture on the PDS-4229, too. If video quality is critical, an outboard scaler is an excellent idea.

Conclusions

There were lots of surprises this year, but no clear winner as I had last year with Panasonic's TH-42PWD3.

Fujitsu gets a tip of the hat for turning out a great-looking panel at an even lower price than the previous price leader, the PFM-42B1. This is sure to result in more price-slashing among all the 42in. panel manufacturers. Sampo needs to get a second-generation panel out there soon.

Panasonic has almost done it again with the TH-50PHD3U, although some false contours reduced its final scores. Pioneer's new PDP-503CMX could prove to be almost as systems integrator-friendly as the PFM-42B1 — a panel that never met a sync format it didn't like. Both 50in. panels will bring you great-looking images in any type of installation.

As for the 61MP1, you have to see this panel to believe it. While not the winner in any category except the obvious — size — it's more than just a big-screen novelty. This panel delivers the goods, and if NEC can make more tweaks to the black levels and video scaling performance, it will be tough to beat. **vs**